

REMARKS

The Applicant has amended the claims to define the invention more particularly and distinctly so as to overcome the technical rejections and define the invention patentably over the prior art.

The following remarks are numbered to correspond to the examiner's numbered issues raised in the First Office Action dated December 10, 2010:

1. No Remarks
2. Rejection of Claims 1-29, 32-36, 38-39, 42 and 44-46 under 35 U.S.C. 112
 - a.) Claims 1 and 44 have been re-written to comply with the requirements for a "means plus function" limitation, as provided for in 35 U.S.C. 112, sixth paragraph.
 - b.) Page 10, second paragraph of the written description of the specification has been amended to expressly recite the previously disclosed structural and operative aspects of the strand that provide a means for fragmentation of the strand. In addition, Claims 35 and 36 have been amended to clarify the claimed matter.
 - c.) Claim 5 has been canceled.
3. No Remarks
4. Claims 1-3, 11-15, 19-22, 32-33, and 42 are rejected under 35 U.S.C. 102(e) as being anticipated by Burns et al. (7,097,203).

The Office Action makes reference to the provision for "a solid fuel component" in the Burns specification (33; col. 3, lines 39-54). Burns teaches a gas-generating inflator for automobile airbags, utilizing two distinct pyrotechnic propellant bodies that combust at

different rates of burning. The first propellant body serves as the “rapid ignition means” and the second propellant body is consumed at a slower rate, while generating a high volume of gaseous byproducts. The second propellant body “contains a mixture of silicone as a fuel and an oxidizer”, thus forming a pyrotechnic composition that combusts rapidly and for a relatively short duration of time. As characteristic of most known pyrotechnic compositions, the “fuel” component operatively burns only in combination with an oxidizing compound that releases oxygen as a byproduct of thermal decomposition.

In contrast, the present linear incendiary strand possesses a co-linearly arranged rapid ignition means and a non-pyrotechnic “fuel component”, wherein operatively a high velocity ignitive reaction traveling along the pyrotechnic element ignites the connected fuel component. The specific attribute of the present invention that distinguishes it from Burns and similar known devices is the continued, free-burning combustion of an included fuel component, which, after ignition, primarily utilizes atmospheric oxygen for the combustion reaction. The fuel component of the present invention more closely meets the definition of a “combustible fuel”, in the true sense of the word “fuel”, rather than a component of a pyrotechnic composition that includes a material to functionally *serve as a fuel* in a chemical reaction.

Burns and other prior art devices do not provide the sustained, contiguous exterior flame generation that the present linear incendiary strand provides. Such long-duration burning

is necessary for the ignition of nearby vegetative materials, some of which may have a high moisture content that inhibits ignition from the short-term flash of heat provided by the rapid burning of pyrotechnic compositions.

A significant novelty provided by the present invention is the inclusion of a *fuel component* which is connectively arranged with a known rapid ignition means. As in other prior art devices, the rapid ignition means of the linear incendiary strand is in part comprised of a pyrotechnic composition that primarily consists of an oxidant (oxidizing substance), and a *fuel compound* (reducing substance). The terms *fuel component* and *fuel compound* refer to distinctly different elements of the incendiary strand, and are therefore not to be interpreted interchangeably in the reading of the patent claims and specification. Likewise, the fuel component of the present incendiary strand is distinct from the pyrotechnic compositions taught in prior art devices, most of which typically include a substance that serves as a fuel component, in combination with an oxygen generating component, to provide a deflagrative reaction upon ignition.

Claim 1 has been amended to more specifically define the fuel component limitation of the present invention, setting forth that the fuel component is "...operable when ignited to undergo free-burning combustion, utilizing atmospheric oxygen for the combustion reaction...". As amended, Claim 1 should be allowed based on the significant distinction between the fuel component disclosed in Burns and the fuel component of the present invention.

5. No Remarks.

6. Claims 1, 11-16, 19-22, 32, 35, 38-39, and 42 are rejected under 35 U.S.C. 102(b) as being anticipated by Reihlen (1,693,818).

Reilen discloses a particular type of firework device, known as a “Grasshopper”. The device is comprised of central pyrotechnic element encased in a tubular enclosure that is restricted at regular intervals to form a chain of report-generating segments. Unlike the present incendiary strand, the device disclosed in Reihlen does not include a separate fuel component, and does not teach such a combination.

The pyrotechnic element in Reilen is presented as a string or other filamentous substrate that is impregnated and coated with a pyrotechnic composition, namely, black powder (meal powder). Similar to the pyrotechnic composition discussed above in Burns (Remark #4), black powder contains a substance (charcoal) that *serves as a fuel* when combined with an oxygen generating substance (KNO_3) and other components to form a mixture that combusts rapidly in the absence of atmospheric oxygen. Reilen essentially describes a “piped match” structure, known in the arts, whereby a normally slow-burning fuse is caused to burn rapidly within the confines of a close-fitting conduit. The present incendiary strand may include such a piped match structure to provide rapid ignition of the strand, however Reilen does not teach nor anticipate the combination of a rapid ignition means and a separate, free-burning, fuel component.

7. No Remarks.

8. Claims 2-3, 5-6, and 44-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reilen (1,693,818) in view of Schick (3,402,032)

Neither Reilen or Schick teach a novel combination of rapid ignition means and a separate fuel component. The prior art references do not contain any suggestion (express or implied) that known rapid ignition means be combined with known free-burning fuel substances to provide the unique attributes of the present invention. Applicant requests that Claim 2, 44 and 45 be allowed as amended; Claims 3,5,6 and 46 are canceled.

9. Claims 2-4 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reilen (1,693,818) in view of Campbell (3,697,668)

Neither Reilen or Campbell teach a novel combination of rapid ignition means and a separate fuel component. The prior art references do not contain any suggestion (express or implied) that known rapid ignition means be combined with known free-burning fuel substances to provide the unique attributes of the present invention. Applicant requests that Claim 2 be allowed as amended; Claims 3,4 and 8 are canceled.

10. Claims 23- 24 are canceled.

11. Claim 25 is canceled.

12. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Reilen (1,693,818) in view of Fronabarger (3,793,100) as applied to claims 23-24 above, and further in view of Eber et al. (6,511,520)

Neither Reilen, Fronabarger or Eber teach a novel combination of rapid ignition means and a separate fuel component. The prior art references do not contain any suggestion (express or implied) that known rapid ignition means be combined with known free-burning fuel substances to provide the unique attributes of the present invention. Applicant requests that Claim 7 be allowed as amended.

13. Claim 34 is canceled.

14. Claims 26 - 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reilen (1,693,818) in view of Rice et al. (3,263,613)

Neither Reilen or Rice teach a novel combination of rapid ignition means and a separate fuel component. The prior art references do not contain any suggestion (express or implied) that known rapid ignition means be combined with known free-burning fuel substances to provide the unique attributes of the present invention. Applicant requests that Claim 26 be allowed as amended; Claims 27 and 28 are canceled.

15. Claims 1, 11-15, 19-22, 32-33, 35-36 and 42 are rejected under 35 U.S.C. 102(e) as being anticipated by Wu et al. (RE 38,592).

Wu discloses a multi-stage aerial fireworks shell that relies on rapid ignition means to communicate an ignitive signal to the three stages of the device. As discussed in Remark #4 above, the fuel component of Wu's pyrotechnic compositions is operatively distinct from the fuel component claimed in the present invention, and there is no suggestion to combine a pyrotechnic device with a separate, free-burning fuel element. Applicant requests that claims 1, 11-15, 35, and 36 be allowed as amended; claims 19-22, 32-33 and 42 have been canceled.

16. Claims 17 and 18 have been amended, and depend upon the examiner's allowance of amended claim 1. Claims 9,10 and 29 have been cancelled.

All active remaining claims have been amended to remove the word "linear" from the named "linear incendiary strand" in the claims, to eliminate redundant terminology (a strand, by definition, is essentially linear).

CONCLUSION

For all of the above reasons, applicant submits that the specification and claims are now in proper form, and that the claims all define patentably over the prior art. Therefore the applicant submits that this application is now in condition for allowance, which action is respectfully solicited.

CONDITIONAL REQUEST FOR CONSTRUCTIVE ASSISTANCE

Applicant has amended the specification and claims of this application so that they are proper, definite, and define novel structure which is also unobvious. If, for any reason this application is not believed to be in full condition for allowance, applicant respectfully requests the constructive assistance and suggestions of the Examiner pursuant to M.P.E.P 2173.02 and 707.07(j) in order that the undersigned can place this application in allowable condition as soon as possible and without the need for further proceedings.

Very Respectfully,



Jeffrey P. Reistroffer

Applicant Pro Se